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Enabling the creation of synergies between Occupational Health and Safety and Productivity

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Abstract

The paper investigates the enabling routines that facilitate the integration of safety inspection and quality control into the production process. The study reveals differences between the behaviours and attitudes of workers associated with safety and quality routines, which can affect the integration of the two functions into the production process. For instance, while employees understand what counts as relevant quality problems, they lack a clear understanding of the different types of safety problems and their impacts on workers' health and safety. We identify opportunities for the creation of synergies through the reinforcement of the structure of accountabilities and the precise mapping of health and safety problems, which increase transparency and flexibility and facilitate the integration of safety and quality into production.

Keywords: Productivity, Quality, Sustainable operations, Occupational health and safety

Introduction

There is a mounting pressure on multinational companies to increase their social performance and to align their business purpose and values with the well-being of workers and society in general (Huq et al., 2016). Within the academic community, one of the most enduring debates in both operations and safety literatures has revolved around how companies can manage a production to be safe and socially responsible on the one hand,

and yet be operationally effective and competitive on the other hand (Pagell et al., 2015). In this stream of research, scholars have argued that a joint management of safety and production routines is more likely to facilitate the creation of synergies and the reduction of tensions between managing operations to be safe and managing it to be effective. Within this context, “*a joint management system is a formal set of processes that allow for shared planning, measurement, monitoring and continuous improvement*” of production and safety (Veltri et al., 2013, p. 125). The main insight from this stream of research is that how the system is managed determines if safety and production are complementary or contradictory. As such, a joint management system makes the priorities related to safety and productivity complementary and do not create trade-offs between safety and production performance (Pagell et al., 2015).

As for the structure of a joint management system, organizational routines play a central role and the relationship between being safe and effective is a function of the set of routines used to manage the production system. An organizational routine is defined as “*a repetitive, recognizable pattern of interdependent actions, involving multiple actors*” (Feldman and Pentland, 2003, p. 96). Organizations use routines to achieve their objectives (March and Simon, 1993). Within a joint management system, safety and quality routines form an integral part of the production system as workers and managers perform safety and quality activities and do not avoid or shortcut them (Pagel et al, 2015). However, this stream of research seem to minimize the effect of routinization and formalization on the human element, as it does not fully account for the motivational and attitudinal outcomes of routines. Indeed, the extant research does not consider the role of subjectivity and agency (Feldman and Pentland, 2003; Feldman and Rafaeli, 2002) as managers and workers are expected to perform routines in the expected and planned manner.

In this paper, we attempt to address this gap by drawing on the organization and bureaucracy literatures (Adler and Borys, 1996; Pugh and Hickson, 1976; Mintzberg, 1979), which consider routines as core features of work formalization in the bureaucratic organization, and emphasizes two contradictory assessments of routines’ effects on the behaviors and attitudes of workers. While the positive assessment argues that routine provides guidance and clarifies responsibilities, thereby increasing work efficiency and reducing role ambiguity, the negative assessment emphasizes the coercive effect of formalization, which stifles innovation and demotivates employees (Adler and Borys, 1996). In the positive assessment, a routine is enabling as it helps employees to perform their tasks better, while in the negative assessment, a routine is coercive as it alienates employees and coerces effort and compliance from them (Adler and Borys, 1996). As such, enabling routines increase the motivation and satisfaction of employees as they execute their daily activities while coercive routines have the opposite effect as employees attempt to avoid or shortcut coercive formalization. As for the integration and the creation of synergies between safety and productivity, enabling routines play a crucial role as employees are more likely to integrate safety routines into their operational activities. As such, companies will increase the synergies between the two domains by facilitating the integration of safety routines into operations.

In order to increase our understanding of the formalization that facilitates the synergies between safety and productivity, we investigate the enabling features of two selected routines: Quality Control and Safety inspection. These two routines are core features of quality and safety management systems, and share similar objectives that aim to control quality problems and Occupational health & safety (OHS) (Fernandez-Muniz et al., 2007;

Juran, 1986). Indeed, quality and safety management systems give requirements for building such routines that enable organizations to control its safety risks and quality problems, and improve organizational performance (ISO, 2008; OSHA IMIS, 2013; Levine and Toffel, 2010; Lo et al., 2014). However, these two routines differ in one important aspect. That is, Quality control routine is known as an important feature of productivity and production efficiency, while Risk control is related to the Health & Safety domain. As consequence, we expect to find differences between the enabling and coercive features of both routines, which increase our understanding on how to integrate safety and productivity. That is, companies with exclusive focus on productivity in detriment of safety are more likely to integrate quality routines into production while adopting a coercive formalization in regards to safety routines. As such, we aim to identify similarities and differences regarding the enabling and coercive features of both routines as they interact with the production process. Then, our objective is to identify opportunities for increasing the enabling features that facilitate the integration of safety routines in the production process, which is a necessary condition for the joint management and the creation of synergies between safety and productivity (Pagell et al., 2015).

Based on these introductory notes, this manuscript aims to address the following research question:

What are the enabling and coercive features governing the routines of Quality control and Safety inspection in a group of selected companies, and how these features affect the workers' behaviours and attitudes associated with the production process?

Having introduced the research question, motivation and scope of this paper, the next sections presents the theoretical foundations of the paper followed by the research methodology. The remaining sections focus on preliminary findings, and preliminary conclusions and recommendations.

Theoretical foundations

The role of organizational routines

The stability of organizational routines is the cornerstone of the stability of organizational systems, such as safety and operations systems. The fundamental idea of a stable system is to provide robustness against unwanted variability (Farjoun, 2010). Stability can be increased and maintained through a consistent process of formalization, standardization, and continuous improvement (Liker and Meier, 2006; Imai, 2012). Although formalization increases performance, coercive routines can have a vicious effect on employees' motivation. We draw on the extant literature (Adler and Borys, 1996; Pentland and Reuter, 1994; Orlikowski, 2000), and identify three features of routines, which we will use in order to identify and analyse the enabling and coercive elements associated with the routines of quality and safety in the 10 companies. These features are: Dealing with breakdowns and problems, Internal and external transparency, and Flexibility. The three features are presented next and related to the domains of quality and OHS.

Dealing with breakdowns and problems

In the enabling approach, dealing with breakdowns, accidents and problems is seen as an opportunity to train the worker and to improve the process, rather than a weapon to sanction deviations (Adler and Borys, 1996). As core features of quality and management systems, quality and risk control routines aim to identify and analyse problems, generate alternatives for action, and select one course of action to solve the problem. The output of Quality control is the identification of quality problems, while the output of Risk control is identify the different types of health and safety risks related to the production process. Yet, quality and safety control routines are the result of interaction among many actors with different motives, information and preferences. Moreover, these routines interact with other streams of action in such a way that it is not always clear where one organizational routine ends and another begins (Feldman and Pentland, 2003).

Companies are able to promote an enabling approach through the reduction of dissonance or perceptual gap among employees and of the role of subjectivity (Das et al., 2014). Within this context, the continuous improvement literature strongly emphasizes the importance of the measurability and observability of output in order to facilitate the identification of quality and safety problems and the reduction of unnecessary tensions among employees. Indeed, we find in the operations literature a range of practices and tools that aim to increase the observability and measurability of problems (Meier and Liker, 2007; Imai, 2012). Moreover, in the enabling approach, problems and breakdowns should not be used as weapon against employees. As such, the role of procedures should not be designed to highlight whether workers' are in compliance, rather they should signal where the process should be improved, or whether further worker training is needed (Imai, 2012; Adler and Borys, 1996).

Flexibility

While the coercive logic results in routines that are designed to minimize the reliance on workers' skills, the enabling approach introduces some level of flexibility in the design of organizational routines, which "*assumes that deviations are not only risks but also learning opportunities*" (Adler and Borys, 1996, p. 74). Indeed, the activities of a routine are represented by the collection of individuals' actions aiming to achieve the desired output; that is, identify quality problems or safety risks. A coercive control of activities defines in detail the specific sequence of steps to be followed during quality and risk control and forces the employees to follow these steps. On the other hand, an enabling approach assumes that deviations are not only risks but also learning opportunities. Adler and Borys (1996) cite a case-study exemplifying the effect of coercive formalization of activities on workers' attitude and motivation. The authors describe that a team charged with changing and improving the existing procedure found that under time pressure, workers followed partly the existing procedure and skipped certain steps. However, the analysis of the procedure in the example revealed that in some cases these steps could indeed be skipped without hindering safety or quality. Then, the authors mention that the team issued a new procedure specifying four distinct guidelines on how to define the right sequence of steps, with the result that the workers could now take short-cuts without being in non-compliance with rules.

Internal and external transparency

Internal transparency is present when "*enabling procedures provide users with visibility into the processes they regulate by explicating its key components and by codifying best-*

practices routines”, while global transparency “*refers to the intelligibility for employees of the broader system within which they are working*” (Adler and Borys, 1996, pp. 72-73). Internal and external transparency facilitates the link between activities and output as it increases employees’ understanding of the effects of their activities and actions on the final output of the routine. Within this context, a core managerial role and responsibility is to ensure that workers know the critical aspects of the production process (Monden, 1983; Imai, 2012). In a coercive approach, information about performance is presented only in the event of quality problem, customer complaint or accident. In enabling approach, it is expected that workers “*will be confronted with unforeseen contingencies*” (Adler and Borys, 1996, p. 72), and will therefore need to interact creatively with quality and safety problems. That is, workers need an understanding of link and logic between their specific activities and quality or safety performance. As such, enabling procedures provide workers with visibility into the processes they operate by explicating the effect of each activity on quality and safety by codifying best-practice practices and learned lessons. Moreover, an enabling approach is materialized when employees have a clear understanding of what are the critical activities that affect quality and risk outcomes as they perform operational and production activities. Furthermore, the presence of functioning systems of incentives and accountabilities increases internal and external transparency as the congruence between individual and organizational goals is boosted.

Table 1 summarizes the enabling features and their effects on human behaviours and attitudes as workers deal with quality problems, safety risks or accidents. The content of the table serves as a guide for data collection and analysis. As such, we will use the description of the enabling features and their effect on workers’ behaviour and attitudes as a guide to collect empirical data and then to analyse the emerging patterns of coercive and enabling features as we move back and forth between empirical data and theory.

Table 1 – Summary of enabling features and their effects on the behaviours of individuals

	The three enabling features of routines		
	Dealing with breakdowns and problems	Internal and external transparency	Flexibility
Description of the enabling features	<ul style="list-style-type: none"> - Problems are seen as opportunity to improve the process - Problems are rigorously investigated and lessons are learned and communicated 	<ul style="list-style-type: none"> - The critical operational steps with relevant effect on quality problems and safety risks are defined and known - Best practices are available for employees in order to improve quality and minimize risks - Identification of problems is aligned to unit or organizational goals - Accountabilities and incentives are used to ensure alignment between quality and safety performance, and organizational goals 	<ul style="list-style-type: none"> - The main role of managers is to reinforce routines and at the same time help employees change routines’ activities when needed - Standard routines are reviewed and improved by managers and workers in order to account for better practices - Deviations from standards are linked to needs of training - Deviations from standards are linked to needs of process improvement

Attitudes and behaviors of individuals	<ul style="list-style-type: none"> - People agree on what counts as a quality and safety problems. - People know what are the priorities for solving quality and safety problems 	<ul style="list-style-type: none"> - People know what can change and what cannot change (critical activities) during the performance of their operational activities - People know what are the effects of operational on quality and safety problems on the business 	<ul style="list-style-type: none"> - People know why to use a routine and why this routine is good for avoiding quality problems and safety risks - People don't skip safety or quality procedures when they come under time or performance pressure
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Research methodology

This study is part of a larger four-year project financed by DANIDA, which is the term used for Denmark's development cooperation within the Danish Ministry of Foreign Affairs. The project is conducted in partnership between Aalborg University, Denmark and Ahsanullah University of Science & Technology (AUST), Bangladesh. The objective of the project is to create knowledge regarding sustainable co-development between occupational health and safety (OHS) and productivity in the readymade garment (RMG) industry in Bangladesh.

This is an exploratory study, which aims to identify and explore the role of safety and operations routines in facilitating the synergies between OHS and Productivity. The exploratory approach is justified by the lack of studies on this subject. We investigate the enabling of safety and quality routines in a series of 10 garment suppliers in Bangladesh. The use of the qualitative approach has the potential to go beyond identifying the various features of stability, to investigating "how and why" these features might sustain or change in a determined routine during human interaction (Yin, 2009).

Data collection involves two to three visits to each supplier. To avoid organizational bias, the research group normally interviewed production managers, safety managers, HR managers, sales managers, production supervisors, as well as workers representative, such as participation committee member. The interviews themes are overlapping in order to increase the validity of data through triangulation. In addition, the research team uses structured observations as a final means for gathering data and triangulating the findings.

All interviews are transcribed and then coded using the qualitative data analysis software NVivo 11. Coding focused on identifying the main features and characteristics related to standardization and the effect of human interaction on routines as presented in Table 1. The coding starts with the individual cases and then compares individual patterns of standardization and human interaction across the remaining cases. Disagreements emerged among researchers are settled by referring back to original data in NVivo and discussing them. The process of coding and analysis is repeated until all disagreements are settled and registered in NVivo.

Preliminary findings

The preliminary findings regarding the features of quality and safety inspection are summarized in tables 2 and 3 respectively. The tables present the empirical findings of the features of quality and safety control encountered in the 10 companies and their effects on the attitudes and behaviours of workers.

Table 2 – The routine of Quality control: Summary of preliminary findings regarding the activities and their effects on the behaviours of individuals

The three features of routines associated with Quality Control			
	Dealing with quality problems	Internal and external transparency	Flexibility
Description of the quality control features	<ul style="list-style-type: none"> - There are instruments and illustrations for the measurement and visualization of the different types of quality problems. - The workers are given feedback and training about how to improve quality. Yet, workers are usually blamed for quality problems. - However, learning from quality problems is rarely formalized as best practices or shared within the company in order to improve the production process. 	<ul style="list-style-type: none"> - There is a classification of defects (frequency and importance) from the customer point of view. As such, quality problems are aligned to organizational goals through customers or buyers. - Main stakeholders (top management and buyers) interact frequently and directly with quality problems - However, there is not much focus on critical operational activities that have most effect on quality problems. - Best practices are available but rarely updated. 	<ul style="list-style-type: none"> - Standard routines are rarely reviewed to improve quality performance. They are rather reviewed in order to increase productivity performance.
Attitudes and behaviors of individuals	<ul style="list-style-type: none"> - Workers and managers agree on what counts as quality problems. - Yet, the recurrence of same problems is present. 	<ul style="list-style-type: none"> - People know that quality problems affect customers but they don't know how their activities affect quality and if improvement is possible - Workers and managers react urgently to solve quality problems 	<ul style="list-style-type: none"> - People might skip quality procedures when they come under time or performance pressure

Table 3 – The routine of Health & Safety Risk control: Summary of preliminary findings regarding the activities and their effects on the behaviours of individuals

The three features of routines associated with Safety Inspection			
	Dealing with safety problems	Internal and external transparency	Flexibility
Description of the risk control features	<ul style="list-style-type: none"> - There are instruments and illustrations for the measurement and observation of the different health and safety risks. - The workers are given feedback about risky behavior, but workers are usually blamed for accidents. - There is no clear standards or measurements regarding the assessment of some types of risk: health and ergonomic risks. 	<ul style="list-style-type: none"> - There is monthly classification of risks and accidents. But, the information is not communicated to all employees. - However, There is not much focus on critical activities and their effect on safety. - For instance, people don't clearly understand the effect of bad ergonomic positions on health problems. - Main stakeholders (top management and buyers) only interact frequently and directly with serious safety incidents. 	<ul style="list-style-type: none"> - Standard routines are rarely reviewed in order to improve safety risks. They are rather reviewed in order to increase productivity performance.

Attitudes and behaviors of individuals	<ul style="list-style-type: none"> - Workers take building and fire safety seriously. - However, Workers do not have a clear understanding of what counts as ergonomic or health risks. 	<ul style="list-style-type: none"> - Workers do not have clear understanding of the effect of bad ergonomics and work environment on accidents frequency and sickness. - Workers and managers react intensively and urgently to solve safety problems when pressure mounts from top management or buyers; otherwise, the business is run as usual. 	<ul style="list-style-type: none"> - Workers might skip some safety procedures when they come under time or performance pressure
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Our empirical findings reveal similarities and differences in relation to the three features of routines. We found evidence that the 10 companies use visual signs, measurement instruments and illustrations that facilitate the measurability and observability of safety and quality problems. However, it seems that, while both workers and managers agree on what counts as a quality problems that should be tackled, they do not have a clear understanding of the different types of risks associated with the work environment. For example, while all employees understand and prioritize fire and buildings structure risks, they often lack basic knowledge on other type of risks - such as ergonomic and health risks - and how these risks might affect workers' health and safety. Moreover, the shared understanding of what constitutes a good quality product is more established among employees and management than what is the acceptable level of safety, which enhances the control and improvement of quality routines.

It is important to mention though that, while quality problems are easily qualified, quantified and measured, it is known that safety and health risks have strong perceptual element that affect how people perceive and react to health and safety issues (Das et al., 2014). Moreover, as companies uses internal quality audit data for identifying quality and safety problems, such audits often follow a standard methodology that assign weights for various risks to get an overall score. However, the auditing systems seem unable to balance the visible and physical risks with the perceptual and less visible elements of risks. Moreover, the recommendations of safety assessment appear to be mostly ceremonial as they didn't imply genuine changes in operations in order to reduce safety risks. These audits seem to send a strong message that workers' safety and health are important but to only as long as no additional costs are incurred by the companies.

Moreover, the investigation reveals that quality routines have more accountability and incentives procedures attached to performance level than the safety inspection routines, which motivate people to act consistently to reduce the difference between actual and standards performance of quality. However, the evidence also shows that, although workers are aware of quality problems, they do not have clear understanding of what are the critical operational activities that have greater impact on the incidence of quality problems. As such, although workers understand what are the important quality problems to tackle and avoid, they do not have a clear view of how the execution of a particular operational activity affects the performance of quality, which often leads to recurrence of same quality problems. However, accountabilities and incentives are strongly reinforced when quality performance decays as top management and buyers increase pressure to solve quality problems. As consequence, quality problems are urgently repaired, yet the repair of quality problems does not often lead to new and better procedures. Moreover, there is not much effort made to identify the true source of problem as workers and managers are almost entirely concerned with closing the case and avoiding the blame.

As for safety and health risks, it seems that top management and buyers are only involved in case of major break of safety or health rules. As such, workers often perceive that top managers place the highest priority on meeting daily production targets, and with respect to safety, workers believe that managers are mostly concerned about not being held accountable in case of major safety issues. As such, tackling health risks with long term effect on workers' health gains priority only when the number of incidents increase to the point where it becomes visible within the organization and to external actors. That is, the effort to avoid penalties often take precedence over finding a way to minimize the safety impact of the problem. As in the quality control domain, rarely is much effort made to identify the true source of safety problems. Furthermore, in neither case is much effort made to improve the process as driver for reducing quality problems and risks. Rather, in most cases process improvement efforts are mainly concerned with productivity increase and meeting customers' deadlines.

Preliminary conclusions and recommendations

The investigation shows that while workers and managers have clear understanding about what counts as quality problems, the same employees lack knowledge about the impact of some categories of risks on workers' health and safety. This perceptual gap is hindering the efforts aimed to integrate the prevention of these categories of risks into operational processes. Moreover, workers and managers rush to solve and settle quality problems as accountabilities are strictly reinforced by top management in case of quality issues. Yet, in the case of safety, top management seem to engage in safety and health problems only when the frequency of incidents is so high that it becomes visible to external actors (Buyers and government bodies). If companies are to succeed in integrating safety and health issues in operations and increasing the synergies between productivity and safety, then a map of the different categories of health and safety risks and a guide for the identification and measurement of these risks are needed in order to direct managerial actions efforts towards an effective improvement of operational processes. Moreover, both internal and external stakeholders should reinforce the accountability system related to health and safety on a regular and daily basis, and without the need for major safety and health breaks to reinforce accountabilities and put pressure to solve the problems. In summary, the increase of internal and external transparency and a precise mapping of health and safety risks is crucial for increasing the flexibility of the operational routines and for the integration of safety and quality into production.

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